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ABSTRACT

This study attempts to build on research that has already been conducted to explore some of the factors that differentiate learning environments that may influence the academic achievement of Asian-American students. Their learning environments, in terms of parent guidance, teacher support, class order, satisfaction, and teaching quality, were studied with attention to gender and language spoken at home. Subjects were 1,527 eighth-grade Asian Americans of differing ethnic backgrounds from the National Education Longitudinal Study of 1988. The student questionnaire and results from a battery of eighth-grade tests were used to gather student data. In general, Asian-American students had favorable learning environments at home and in school. Students reported good parent support, positive teacher support, good teaching quality, and satisfaction. Girls had a more favorable perception of parental guidance and class order than did boys. Language-minority students reported less parental guidance and lower class order than students from English-speaking families, and this was coupled with lower achievement in reading and science standardized test scores. The implications of these findings for educational policy and practice are discussed. Three tables present study findings, and the Student Learning Environment Survey is included. (Contains 44 references.) (SLD)

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Effects of Home and School Learning Environments on the Academic Achievement of Eighth-Grade Asian American Students

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Effects of Home and School Learning Environments on the Academic Achievement of Eighth-Grade Asian American Students

During the past two decades, Asian American education has gradually gained the attention of researchers. Among their studies, some viewed Asian Americans' exceptional academic achievement as a phenomenon and examined its contributing factors, including schooling, heredity, and culture (Brand, 1987; Collier & Powell, 1990; Karkhanis & Tsai, 1988; Peng, Owings, & Fetters, 1984; Sue & Okazaki, 1990; Sue & Okazaki, 1991; Wei, 1986). Schneider and Lee (1990), for example, found a positive correlation between Asian students' high achievement and the values they share with their parents, the home learning activities in which families participate, and the expectations they share with their teachers and peers. In addition to culturally inherited high respect and fond of "the learned", a majority of Asian parents view education as a means for their children to establish themselves in the United States. Sue and Okazaki (1990, 1991), in their investigation of factors predicting Asian American academic achievement, proposed the concept of "relative functionalism", under which Asian Americans perceive and have experienced restrictions in upward mobility in occupations unrelated to education. Consequently, educational achievement assumes importance beyond what can be predicted from cultural values. Similarly, Mau (1990) reviewed four studies on college aspirations of Asian and Pacific Americans and concluded that Asian parents expect their children to attend colleges to achieve upward social mobility.

Other researchers, however, have looked at Asian-American students from quite a different perspective. They reported that a majority of Asian-American students struggle for their own identity, endure long-term adjustment stress to cultural differences and language barriers, and search for understanding and sensitivity to their needs (Ascher, 1990; Coker, 1988; Divorky, 1988; Tsang & Wing, 1985; Yee, 1992). Researchers have pointed out that some Asian ethnicity subgroups, such as Pacific Islanders, have not been as academically

successful as other subgroups (Bradby & Owings, 1992). Divorky (1988) found that more than one quarter of Asian American students dropped out of school in New York City, and Pacific Islanders had a dropout rate of 17.1% in San Diego, California. A statistical analysis report of the National Center for Education Statistics (NCES) showed that around 24% of Asian American eighth graders failed to achieve the basic level in reading and 23% failed in mathematics (Bradby & Owings, 1992). A few studies further examined acculturation of Southeast and other subgroups of Asian American students, outlined their unique conditions of educational risk, and designed special assessment procedures for them (Dao, 1991; Mau, 1990).

The bi-polarized research reports reflect the diversity in learning environments and academic performance of Asian American students. Inaccurate information about the homogeneity of Asian American students has limited the development of educational programs that address their needs (Pang, 1990; Hakuta, 1983). Researchers need to identify variables associated with the differences, including gender, grade-level, ethnicity, home language, social economic status, length of U. S. residence, and others (Hakuta, 1983; Huang & Waxman, 1993a; Huang & Waxman, 1993b; Kennedy & Park, 1994; Tsang & wing, 1985). For example, Bradby and Owings (1992) reported great disparities in reading and mathematics achievement among Asian American eighth graders by ethnicity, social economic status, and length of U. S. residence. Among Asian Americans, students from major ethnic groups like Chinese, Japanese, and Korean tended to perform better in reading and mathematics than students from other ethnic groups. Students from upper social economic status and students who have lived longer in the United States also showed higher academic achievement than their counterparts (Bradby & Owings, 1992; Lee, 1989). Huang & Waxman (1995), in comparing learning environments between Asian American and white middle school students, found that there were significant differences in mathematics learning environment among Asian American middle school students by gender and by grade level. In general, girls had more positive perceptions of their classroom learning environment than boys. Likewise, sixth-

grade Asian American students perceived more positive learning environment than seventh- and eighth- grade students. In other words, Asian American students' learning environment differs among various subgroups. Little research, however, has directly focused on educational equity among Asian American students in terms of their learning environments and its effect on their learning.

It is very important to deal with this issue because the close relationship between learning environment and student learning outcomes is well documented (Fraser, 1989, 1991; Fraser, Walberg, Welch & Hattie, 1987; Knight & Waxman, 1991; Padron, 1992; Uguroglu & Walberg, 1986; Walberg, 1988; Waxman, Huang, Knight, & Owens, 1993; Wittrock, 1986). Students react to what they perceive in their learning environment. Fostering an effective classroom learning environment was recommended as a means of enabling at-risk students to succeed in school (Walberg, 1986, 1988; Wang, Reynolds, Walberg, 1994; Waxman, Huang, & Owens, 1994).

This study attempts to build upon research that has already been conducted to explore some of the factors that differentiate learning environments which may influence the academic achievement of Asian American students. An understanding of how various groups of students from Asian background differ in various domains of their learning environment and academic performance is useful to explain the dimension and extent of actual differences, and to help educators generate policy and practice aimed at achieving educational equity. Therefore, the purpose of the present study is to investigate differences in Asian-American students' learning environments and their relationship with student cognitive learning outcomes. More specifically, this study addresses three research questions:

(1) What is the learning environment of eighth-grade Asian American students in terms of parent guidance, teacher support, class order, satisfaction, and teaching quality?

(2) Are there significant differences in the learning environment of Asian American students by gender and by language spoken at home?

(3) Are any of these learning environment variables significantly related to student academic performance?

Data Source

The data derived from the National Education Longitudinal Study of 1988 (NELS:88) data files, a database collected and prepared by the National Center for Education Statistics of the U. S. Department of Education. In each of the nationwide 1,052 schools, about 25 eighth graders were surveyed and tested in the spring of 1988. Among the 25,000 eighth graders, 1,527 were Asian American students. Because NELS:88 contains large number of students of various ethnicities as well as Limited English Proficient (LEP) students, it is particularly suited to investigate a variety of questions about student language background. In this study, 107 Asian American students were identified by teachers as LEPs. The database excluded mentally handicapped students, students not proficient in English, and students having physical or emotional problems, which account for 1.9% of eighth graders in the nation (Ingels, Abraham, Karr, Spencer, Frankel, 1990)). Because of this restriction, generalization of the findings from this study will limit to the large population excluding the above mentioned students.

Methods

Subjects

The subjects in the present study are 1,527 eighth-grade Asian American students. Among them, about 52% are boys and 48% girls. They represent a multitude of ethnic peoples. Approximately 17% of them are Chinese, 20% are Filipino, 13% are Southeast Asian, 11% are Korean, 9% are Pacific Islanders and South Asians, 6% are Japanese and the remaining 15% make up another category, including west Asians and others. Over 52% of them are native-born and nearly 48% are foreign-born. About 51% are language minority and 49% are not. The term "language minority" is defined as students who come from homes in which a language other than English is typically spoken. If the student's response to the

Student Questionnaire BYS22 indicates that a language other than English is USUALLY spoken in the home, the student is classified as language minority.

Instruments

The data collection instruments utilized in the study include the Student Questionnaire and a battery of eighth grade tests. The Student Questionnaire was designed by the NCES to collect information about a wide range of topics, including students' perceptions of their schools and teachers, language use, family background, perception of self, school work, and school activities, etc. For this study, selected items from the Questionnaire were grouped into five scales: Parent Guidance, Teacher Support, Class Order, Satisfaction, and Teaching Quality. Each scale consisted of three items, except Satisfaction. For this sample, the alpha reliability coefficient for the Parent Guidance scale is .67, for the Teacher Support scale is .59, for the Class Order scale is .59, for the Satisfaction scale is .71, and for the Teaching Quality scale is .67. The test battery, developed by the Educational Testing Service (ETS), was a series of cognitive tests completed by students in the four areas: reading, mathematics, science, and history/citizenship. According to an ETS report, the test battery has adequate validity and reliability. The reliability coefficients for the four areas: reading, mathematics, science, and history/citizenship are .84, .90, .75, and .83 respectively (ETS, 1989, p.22).

Analysis

Descriptive statistics reports Asian American students' learning environment and standardized test results. A multivariate analysis of variance (MANOVA) was used to determine whether there were significant differences in these students' learning environment and cognitive tests by gender and by language typically spoken at home. Multiple regression analysis was conducted to determine the magnitude of the relationship between learning environment variables and students' achievement in the standardized cognitive tests. Sample weight and design effect were adjusted according to NELS:88 Base Year Component Data File User's Manual (Ingels et al, 1990).

Results

The results indicate that Asian American students, in general, had favorable learning environments at home and in school. Since the beginning of the school year, nearly 40% of them have discussed with their parents about selecting courses or programs at school three or more times, and only 15% have not discussed with their parents at all. Nearly 48% of them have discussed with their parents school activities or events of particular interest to them three or more times, and only 10% have not discussed at all. Nearly 48% of them have discussed with their parents about things they have studied in class three or more times, and only 13% of them have not discussed at all. Consequently, the mean value for their parent guidance was 2.32 on a 3-point scale.

These Asian American students reported positive teacher support, teaching quality, and satisfaction (all have a mean value over 2.5 on a 4-point scale). Among the four school learning environment scales, they rated the Teacher Support scale the highest value, followed in descending order, by Teaching Quality and Satisfaction. On the other hand, they rated Class Order relatively low, with a value below 2.5 on a four-point scale. Their mean standardized test scores were slightly above national averages. They scored 51, 54, 52, 52 for reading, mathematics, science, and history/citizenship respectively.

The MANOVA results revealed that there were overall significant differences in learning environments and achievement by gender (Wilks' lambda=0.97, F=7.66, $p<.001$) and by home language (Wilks' lambda=0.96, F=9.48, $p<.001$). But there were no significant differences in learning environment variables due to the interaction of gender and home language. Follow-up univariate analysis of variance (ANOVA) revealed gender- and home language-related differences in various dimensions of learning environment and test results.

Table 1 presents the means, standard deviations, and significant differences in various dimensions of learning environment between girls and boys, and between students from English speaking families and language minority. Girls reported stronger parental guidance and class order, but less satisfaction than boys. Similarly, students from English-speaking

families reported significantly greater parental guidance, class order, but less satisfaction than language minorities. There were no significant differences in teacher support and teaching quality by gender or home language.

Table 2 presents the differences in student achievement by gender and home language. Boys scored significantly higher in science but lower in reading tests than girls. Students from English-speaking families scored higher in both reading and science tests than language minorities. There were no significant differences in mathematics and history/citizenship scores between boys and girls or between language minority and non-language minority.

Table 3 presents the multiple regression results. The results indicated that learning environment had significant influence on all four subject areas. The significant variables included parent guidance and satisfaction. Parent guidance and satisfaction were positively and significantly correlated with students' reading achievement; parent guidance had a significant and positive correlation with mathematics achievement; satisfaction had a significant and positive correlation with science achievement and history/citizenship achievement; and satisfaction and parent guidance had a positive and significant correlation with their composite achievement. However, variables such as teacher support, teaching quality, and classroom order did not regress significantly with any cognitive test scores. All tolerance values for the five learning environment variables were above .40, suggesting there were little multicollinearity between scales.

Discussion

The results of the present study reveal that Asian American eighth graders perceived positive teacher support and teaching quality. They usually looked forward to classes and enjoyed schools. Over 85% of them have discussed with their parents about what has been going on in school at least once since the beginning of the school year. On the other hand, they had a much lower perception of their class order. As Asian educational philosophy often emphasizes the importance of disciplinary behaviors, these Asian American students may view

that the degree of disruptive student behaviors at their school somewhat beyond their expectation.

The results of this study also reveal that there are significant differences in learning environment and academic performance among Asian American eighth graders by gender and by language typically spoken at home. Girls had a more favorable perception of parental guidance and class order than boys. This is inconsistent with a previous research study which found that girls and boys perceived no difference in parental involvement (Huang & Waxman, 1995). The previous study, however, dealt with learning environment in mathematics classroom and the interaction was initiated by parents rather than by students themselves. Boys and girls may have received similar amount of parental help and interest in learning mathematics, but girls appeared to be more voluntarily communicating and seeking advice from their parents regarding their activities, programs, and courses taken at school. On the other hand, girls were looking forward to classes less than boys. Plausible explanations of this discrepancy may include unequal teacher and student expectations, peer pressure, teachers' instructional strategies, etc. (Marrett, 1985; Nairn,1991). Further research needs to examine the relationships between satisfaction and these variables.

In terms of home language-related differences in learning environment, language minority students, like boys, reported less parental guidance and lower class order than students from English-speaking families. Since most language minority students were foreign born immigrants, their family members were usually not very fluent in speaking English. The language shift that occurs among immigrant families from ethnic language to English in different generations may cut off inter-generational communication and often alienate children from their parents (Fillmore, 1994). Furthermore, more language minorities attended inner-city schools with lower class order. Frequency distributions showed that a greater percentage of language minorities were from lower income families and enrolled in schools which had over 50% of students in free lunch programs than students from English speaking families. Although they reported greater satisfaction, they scored lower in reading and science. This

discrepancy raises some concern. Future research may investigate the factors associated with the variation in their learning.

Previous research studies have reported that the academic performance of Asian American language minority ranges from the lowest to the highest (Bradby & Owings, 1992) and that inspite of not speaking English at home, various Asian American groups excel academically (Stone, 1992). Nonethelessly, results from this study indicate that Asian American language minority had significant lower achievement in Reading and Science standardized tests than students from English speaking families. Kennedy and Park (1994), in a study of home language as a predictor of academic achievement for Asian American youth, have similarly found that Asian American students, speaking a language other than English in the home was negatively related to standardized test scores in reading. Asian American students' background variables such as home language and gender were factors differentiating their achievement in certain content areas.

Keith and Benson (1992), in their investigation of the effects of manipulable influences on high school grades across five ethnic groups, concluded that Asian-Americans' learning was strongly affected by school learning variables such as quality, motivation, academic coursework, and homework. Findings of this study support partially their conclusion by identifying learning environment variables affecting students' cognitive performance. Middle school students' learning outcomes in various course areas were positively influenced by satisfaction, and/or parental guidance. Students who were more satisfied did better in reading, science and history/citizenship. Satisfaction and academic achievement may reinforce each other.

The findings of this study have implications for educational policy and practice. These findings provide some insight into the equity issue among Asian American students by addressing the effect of gender and home language on students' learning environments as well as by identifying learning environment variables which may predict their academic achievement. Teachers may use these feedback to provide educational programs that meet the

specific needs of various subgroups of Asian American students. The educational community may need to recognize the diversity among Asian American students' background and learning environments and its impact on learning outcomes in order to design effective strategies and policies to address their individual needs.

Future research may explore other background factors concerned with Asian American students' learning environment and other learning environment variables which may influence their academic achievement. Future research may also employ additional statistical methods such as path analysis and canonical correlation to explain the extend and magnitude of the learning environment effects on student academic achievement.

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Table 1

Differences in Learning Environment by Gender and Home Language

By Gender

Variable	Boys (n=709) M	SD	Girls (n=679) M	SD	F
Parent Guidance[@]	2.25	0.40	2.40	0.36	29.32**
Teacher Support	2.91	0.40	2.96	0.39	3.45
Class Order	2.29	0.42	2.42	0.44	17.64**
Satisfaction	2.80	0.47	2.72	0.44	9.02*
Teaching Quality	2.87	0.42	2.89	0.40	0.30

* p<.01. ** p<.001.

By Home Language

Variable	English (n=600) M	SD	Non-English (n=788) M	SD	F
Parent Guidance[@]	2.38	0.42	2.26	0.36	23.59**
Teacher Support	2.93	0.43	2.94	0.37	0.00
Class Order	2.40	0.47	2.31	0.40	12.41**
Satisfaction	2.68	0.47	2.84	0.44	18.20**
Teaching Quality	2.85	0.45	2.91	0.37	6.60

** p<.001.

[@] Note: Only Parent Guidance is on a 3-point scale; all other variables are on a 4-point scale.

Table 2

Differences in Student Achievement by Gender and Home Language

By Gender

Variable	Boys (n=746) M	SD	Girls (n=709) M	SD	F
Reading	49.94	7.82	52.55	7.10	23.19**
Mathematics	53.63	8.40	53.51	7.53	0.02
Science	52.63	8.15	50.88	7.10	10.96**
History/Citizenship	52.04	8.28	51.76	7.22	0.30

** p<.001.

By Home Language

Variable	English (n=625) M	SD	Non-English (n=830) M	SD	F
Reading	52.19	8.03	50.32	7.07	14.45**
Mathematics	53.31	8.75	53.87	7.38	0.61
Science	52.51	8.35	51.18	7.12	7.55*
History/Citizenship	52.59	8.22	51.30	7.42	6.20

* p<.01. ** p<.001.

Table 3

Learning Environment Variables Significantly Regressed with Student Achievement

Subject	Learning Environment Variable	Reg. Coefficient	Probability
Reading	Satisfaction	2.52	.0001**
	Parent Guidance	1.75	.0002**
Mathematics	Parent Guidance	1.04	.0396@
Science	Satisfaction	1.42	.0019*
History/Citizenship	Satisfaction	1.42	.0001**
Composite	Satisfaction	1.73	.0001**
	Parent Guidance	1.49	.0015*

@ $p<.05$. * $p<.01$. ** $p<.001$.

Student Learning Environment Survey

Since the beginning of the school year, how often have you discussed the following with either or both of your parents or guardians?

(Mark one on each line)

	Not at all	Once or twice	Three or more time
a. Selecting courses or programs at school	____	____	____
b. School activities or events particular interest to you	____	____	____
c. Things you have studied in class	____	____	____

For each of the eighth grade subjects listed below, mark the statement that best express your opinion.

(Mark one on each line)

	Strongly Agree	Agree	Disagree	Strongly Disagree
I usually look forward to				
Mathematics class	____	____	____	____
English class	____	____	____	____
Science class	____	____	____	____
social studies class	____	____	____	____

How much do you agree with each of the following statements about your school and teachers?

(Mark one on each line)

	Strongly Agree	Agree	Disagree	Strongly Disagree
a. Students get along well with teachers	____	____	____	____
b. Other student often disrupt class	____	____	____	____
c. The teaching is good	____	____	____	____
d. Teachers are interested in students	____	____	____	____
e. When I work hard on school work, my teachers praise my effort	____	____	____	____
f. In class I often feel "put down" by my teachers	____	____	____	____
g. Most of my teachers really listen to what I have to say	____	____	____	____
h. Disruptions by other students get in the way of my learning	____	____	____	____
i. Misbehaving students often get away with it	____	____	____	____